Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

With these data it is not difficult to calculate the effect of any change in the amount of carbon dioxide upon the temperature of the surface of the earth. The temperature of the earth's surface is theoretically in equilibrium with that of the atmosphere. Now if by any increase in the amount of the carbon dioxide the atmosphere retains more heat than before, it will radiate more heat to the surface of the earth. The surface temperature then will rise until there is again an equilibrium between the two. This rise is governed by Stefan's law which states that the intensity of the radiation is proportionate to the fourth power of the e r

From these data Professor Arrhenius finds that if the carbon dioxide is increased 2.5 to 3 times its present value, the temperature in the arctic regions must rise 8° to 9° C. and produce a climate as mild as that of the Eocene period. A diminution to 0.62 to 0.55 of its present value must cause a fall of from 4° to 5° C. and give us a glacial period.

It is to be noted that in every case throughout the calculation Professor Arrhenius has preferred to slightly underestimate the effect of the carbon dioxide than to risk a possible overestimate. Also where he has been compelled to use interpolation the limit of error has been well within the degree of accuracy of the observations upon which they are founded.

The tremendous interest of these considerations, not only as a basis for the interpretation of the past history of the globe but also for the prophecy of its future, demands an investigation of the problem along the lines of direct experiment, as a supplement to the elegant calculations of Professor Arrhenius. CYRUS F. TOLMAN, JR.

Special Report on Gypsum and Gypsum Cement Plasters. By G. P. GRIMSLEY and E. H. S. BAILEY. University Geological Survey of Kansas, Vol. V. Pp. 183, 30 plates. Topeka, 1899.

Among the minor mineral industries of the country those connected with gypsum have been, so far as literature is concerned, heretofore neglected. The present report is accordingly particularly welcome. The papers so far accessible have been, in the main, devoted to the description of local deposits and the technology of the gypsum industries has not been described before in any adequate manner. The present volume includes not only a description of the Kansas gypsum beds but brief notes on the gypsum of other states and countries and a full discussion of the mining and milling processes. The body of the work is by Dr. Grimsley while Professor Bailey contributes a welcome chapter dealing with the chemistry of the subject.

In 1897 Kansas produced 50,045 tons of gypsum which had a value of $252,811. It was a little behind Iowa in production and ahead in values; the difference being in the large proportion of the Iowa product sold as land plaster. Aside from these two states Michigan and New York are the main producers. The Kansas gypsum is found in three fields; the Northern or Blue Rapids area mainly in Washington and Marshall counties, the central or Gypsum City area of Salina, Dickinson, and Marion counties, and the southern or Medicine Lodge area in Comanche and Barber (misprinted Barton on map) counties. The beds occur in the Permian of Prosser's classification and the deposits include the original rock deposits and the derived gypsum earths which are of recent origin. These gypsum earths are the distinctive beds of the Kansas-Oklahoma district and are thought to be marsh deposits deriving their peculiarities from the secondary deposition of gypsum in clays. They are used in the production of gypsum cements and are mined by ordinary surface methods. The rock gypsum is won by underground mining on a room and pillar system, of which a more detailed account would have been valuable, and are used in the production of plaster of Paris and other products.

The Kansas milling practice does not seem to differ from that of other districts especially, though the Stedman disintegrator has been introduced and a cooling air blast is used at one point to elevate the calcined plaster. Here as elsewhere grinding is in the main done by stones and it seems peculiar, in view of the great progress of recent years in fine grinding machinery, that the numerous experiments in the direction of cheaper and more expeditious grinding have never borne fruit in the gypsum industries. Burning is done in the ordinary Marsh calcining kettle. It would seem that in the case of the gypsum earths at least the rotary furnaces now so much used could be applied to advantage.

In the discussion of the set of the plaster Dr. Grimsley has contributed some highly interesting and valuable microscopic studies in which he shows, in brief, that the strength of the set plaster depends upon the formation of a network or felt of fine lath-shaped crystals and that the quickening agents in this setting process are the few small crystals present in the dry plaster. This accords well with all the known facts in the case and is furthermore in line with Jameson's observations on the setting of Portland cements. It explains some of the peculiarities of the behavior of retarders though in the matter of that vexed subject but little that is new is brought out. If the subject of the strength, and rapidity of set of the gypsum cements could have been gone into a little and illustrated by tensile strength and other tests it would have added greatly to the value of the book and have aided in defining the sort of situations in which these cements could be used to best advantage. In the form of hard white finish they now dominate the market so far as interior work is concerned but the advisability of using them for wall work in any general way is open as yet to some question. This is particularly true in view of the strength and cheapness of magnesian limes and the availability of non-sulphate cements.

Dr. Grimsley's report is a valuable one, particularly in its technical as distinguished from its geological phases. It will undoubtedly have a large influence on the gypsum industry of the state and is a credit to the vigorous Kansas Survey. H. F. BAIN.

American Cements. By URIAH CUMMINGS. Pp. 299, 8 vo. Rogers & Manson, Boston. 1898.

In the rapid introduction of Portland cements in this country the importance and value of the Roman cements bid fair to be overlooked. At present there is what the author fittingly nominates a "craze" for quick setting, high testing cements, and the slower setting, cheaper grades are looked upon in many quarters as of very little value. Mr. Cummings' long experience in the manufacture of cement and his wide interest in the subject admirably fit him to discuss it. In this little book he has gathered together much scattered information and has added very much from his own experience. His interpretations of the chemical processes involved in the making and the setting of cements will, doubtless arouse much opposition; particularly in his plea for the magnesian cements, but where so much is uncertain any hypothesis backed with such facts as Mr. Cummings marshals must necessarily receive careful attention. Taken as a whole the book is one of which no one interested in cements and the utilization of our limestones and shales, can afford to remain in ignorance.

H. F. BAIN.